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Ithomiinae (Lepidoptera) of Rancho Grande, Venezuela, Including Two New Species.[1]

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(Plate I).

[This is one of a series of papers resulting from the 45th and 46th Expeditions of the Department of Tropical Research of the New York Zoological Society, made during 1945 and 1946 under the direction of Dr. William Beebe with headquarters at Rancho Grande in the National Park of Aragua, Venezuela. The expeditions were made possible through the generous cooperation of the National Government of Venezuela and of the Creole Petroleum Corporation.

[The characteristics of the research area are in brief as follows: Rancho Grande is located in north-central Venezuela (10° 21′ N. Lat., 67° 41′ W. Long.), 80 kilometers west of Caracas, at an elevation of 1,100 meters in the undisturbed montane rain forest which covers this part of the Caribbean range of the Andes. Adjacent ecological zones include seasonal forest, savanna, thorn woodland, cactus scrub, the fresh-water lake of Valencia and various marine littoral zones. The Rancho Grande area is generally subtropical, being uniformly cool and damp throughout the year because of the prevalence of the mountain cloud cap. The dry season extends from January into April. The average humidity during the expeditions, including parts of both wet and dry seasons, was 92.4%; the average temperature during the same period was 18° C; the average rainfall over a five-year period was 174 cm. The flora is marked by an abundance of mosses, ferns and epiphytes of many kinds, as well as a few gigantic trees. For further details, see Beebe and Crane, *Zoologica*, Vol. 32, No. 5, 1947. Unless otherwise stated, the specimens discussed in the present paper were taken in the montane cloud forest zone, within a radius of one kilometer of Rancho Grande.]

The New York Zoological Society's Department of Tropical Research, during the 1945 and 1946 field work at Rancho Grande, Venezuela, collected 800 Ithomiinae which we identify as 30 species representing 19 genera; two of these species are described as new. This collection was made in the area discussed by Beebe and Crane (1947), a subtropical cloud forest.

So much tropical collecting has been poorly documented, unfortunately, that many species cannot yet be assigned with certainty to vertical ecologies. In general, the Ithomiinae with strong color and pattern are scarcer at higher altitudes.

P. J. Anduze collected assiduously in that area, and his Ithomiinae have been itemized by Dr. Forbes (1940) and commented upon by Lichy (1943). The Carnegie Museum contains a large collection made in northern Venezuela by S. M. Klages, and a smaller one made by M. Graham Netting. None of these collections emphasized the cloud forest ecology. It is interesting to note that they included some species not taken at Rancho Grande; the inference is that such species probably are not cloud forest forms, but belong to some lower vertical ecology. On the other hand, several species are in the present collection which have not been taken at all, or only sparsely, at lower altitudes; such species are suggestively cloud forest inhabitants. In the list following we have attempted to note our opinion on those species which appear to belong in the cloud forest, or other ecology. Where no opinion is noted, we regard evidence at hand as inconclusive.

The fauna of northern Venezuela differs to a suprising extent from that of the great highlands south of the Orinoco. The affinities, of Ithomiinae particularly, of northern Venezuela are with northern Colombia and sometimes even reach into Central America; the fauna extends into Trinidad with only minor changes. Venezuelan Guiana, the southern highland region, on the other hand, has a fauna closer to that of British Guiana. These differences have been discussed by Dr. Forbes (1942) in his report on Anduze's collecting south of the Orinoco.

Of particular interest is Lichy's discussion (1944) of the structure and habits of *Hyalyris coeno* and *H. cana*, since it is one of the very few studies of its kind published on Ithomiinae and offers ecologic information which is sorely needed.

Generic assignments in the list following are according to Fox (1940), differing from those found in Haensch (1909).

[1] Contribution No. 782, Department of Tropical Research, New York Zoological Society.

Athesis clearista clearista Doubleday & Hewitson.

A. clearista Dbld. & Hew., 1847. Gen. Diurn. Lep., 1: 110; pl. 16, fig. 3. (Venezuela).

This subspecies is endemic to Venezuela, being replaced in Colombia by the darker *A. c. bassleri* Fox. The lone male taken at Rancho Grande probably was a stray, the subspecies belonging closer to sea level. (2 ♂).

Eutresis hyperia hyperia Doubleday & Hewitson.

E. hypereia Dbld. & Hew., 1847. Gen. Diurn. Lep., 1: 111; supplemental plate (1852), fig. 2. (Venezuela).

This is a widespread subspecies found in Colombia and Venezuela south into northeastern Peru, but not characteristic of the high Andean valleys. (4 ♂, 1 ♀).

Tithorea harmonia furia Staudinger.

T. furia Staudinger, 1884. Exot. Schmet., 1: pl. 30. id., 1885, ibid.: p. 73 (Venezuela & Colombia).

This is not a typical cloud forest form. *T. h. furia* is found throughout northern Venezuela and northern Colombia. In southwestern Venezuela and in the Colombian Amazons, *T. h. furina* Godman & Salvin, a darker subspecies, intergrades with it, the latter in characteristic coloring and pattern being found in central and southern Colombia in the mountains. (1 ♀).

Melinaea lilis lilis (Doubleday & Hewitson).

Mechanitis lilis Dbld. & Hew., 1847. Gen. Diurn. Lep. 1: 130; pl. 17, fig. 4. (Venezuela).

This subspecies likewise is found throughout northern Venezuela and west into Colombia, from whence a recently collected series from the Department of Cauca is at hand. Dr. Forbes (1940) found *M. l. sola* Kaye, the Trinidad subspecies, in Paria. (5 ♀).

Xanthocleis aedesia aedesia (Doubleday & Hewitson).

Thyridia aedesia Dbld. & Hew., 1847. Gen. Diurn. Lep. 1: 118; pl. 16, fig. 4. (Venezuela).

A subspecies widely distributed throughout the northwestern quarter of South America, often common; probably these specimens were strays in the cloud forest. Reliable altitude records at hand place the normal vertical distribution between 500 and 1,200 meters. In a recent revision of the genus, d'Almeida (1945) includes Nicaragua, Costa Rica, Honduras and Panama in the range; this subspecies does not occur at all in Central America, but is replaced by *X. a melantho*. (4 ♂, 8 ♀).

Mechanitis doryssus veritabilis Butler.

M. veritabilis Butler, 1873. Cist. Ent., 1: 155. (Venezuela).

The Venezuelan subspecies, which is probably not a typical cloud forest form. (4 ♂, 10 ♀).

Hyalyris coeno coeno (Doubleday & Hewitson).

Ithomia (Ceratinia) coeno Dbld. & Hew., 1847. Gen. Diurn. Lep., 1: 127; pl. 18, fig. 2. (Venezuela).

Authentic records of this subspecies are confined to higher altitudes and in Venezuela only; probably it is an endemic cloud forest form. We suspect that this is the insect which Dr. Forbes (1940) called *Ceratinia frater*. The latter is found only in the Andean valleys of eastern Ecuador and northern Peru, never in Venezuela. *H. frater* is amazingly similar, superficially, to several other Venezuelan members of the genus *Hyalyris*. (2 ♂, 1 ♀).

Hyalyris cana cana (Haensch).

Ceratinia cana Haensch, 1905. Berl. Ent. Zeit., 50: 157; pl. 5, fig. 16. (Colombia).

This is a species sibling to *coeno*. However, not only is it not a variation of *coeno*, as several authors have suggested, but it belongs to an entirely different section of the genus, as a study of the genitalia shows. Records at hand indicate a cloud forest distribution in northern Venezuela, west into the Santa Martas of Colombia. René Lichy has an interesting and accurate account (1944) of *H. coeno* and *H. cana*. (4 ♂, 1 ♀).

Hypothyris euclea fenestella (Hewitson).

Ithomia fenestella Hew., 1854. Exot. Butt., 1: 27; pl. 14, fig. 25. (Venezuela).

This is a common form in Venezuela and Trinidad. In Colombia it is replaced by *H. e. intermedia* Butler, and in Central America by *H. e. valora* Haensch. Long series at hand from Trinidad and a wide assortment of Venezuelan localities suggest that *fenestella* is not sharply differentiated from *H. e. euclea* Godart. (35 ♂, 56 ♀).

Ithomia agnosia agnosia Hewitson.

I. agnosia Hew., 1854. Exot. Butt., 1: 34; pl. 17, fig. 45. (Venezuela).

The distribution is throughout the mountains of Venezuela, Colombia and south into northern Peru. (6 ♂, 12 ♀).

Ithomia iphianassa iphianassa Doubleday & Hewitson.

I. (Ceratinia) iphianassa Dbld. & Hew., 1847. Gen. Diurn. Lep., 1: 127; pl. 18, fig. 3. (Venezuela).

This subspecies has often been recorded

as a subspecies of *"Ithomia" lycaste,* but one of us has shown (Fox, 1939) that *Papilio lycaste* Fabricius belongs in the genus *Hypothyris,* not in *Ithomia; iphianassa,* therefore, has no connection with *lycaste.*

The present subspecies is common in Venezuela, is replaced in Colombia by *I. i. anaphissa* Herrich-Schaeffer. Along the common boundary area between their ranges they intergrade. (109 ♂, 37 ♀).

Oleria victorina graziella (Oberthür).

Ithomia graziella Obert., 1878. *Ann. Soc. Ent. France,* (5) 8: 161. (San Estevan, Venezuela).

I. victorina, Hew. (not Guerin), 1855. Exot. Butt., 1: 43; pl. 22, fig. 75. (Venezuela).

O. v. victorine (Guerin) (altering the original ending to *"a"* is false scholarship), is Bolivian, *O. v. graziella* is Venezuelan. Confusion exists in the literature as to the application of these names, a condition made more acute by erroneous statements in Seitz by Haensch (1909). Dr. Forbes (1940) applied the names correctly. *O. v. graziella* ranges west into Colombia and is replaced by *O. v. paula* Weymar in Central America. (2 ♂, 7 ♀).

Oleria makrena makrena (Hewitson).

Ithomia makrena Hew., 1854. Exot. Butt., 1: 28; pl. 14, fig. 29. (Venezuela).

This is distributed in northern Venezuela west into Colombia. (51 ♂, 21 ♀).

Oleria phemonoë phemonoë (Doubleday & Hewitson).

Ithomia phemonoë Dbld. & Hew., 1847. Gen. Diurn. Lep., 1: 126; pl. 18, fig. 5. (Venezuela).

This and *O. makrena* are sibling species. *O. p. phemonoë* is much the scarcer, and appears to be limited to Venezuela. (2 ♂, 3 ♀).

Aeria eurimedia agna Godman & Salvin.

[*Ithomia* (*Aeria*) *agna* Dbld. & Hew., 1847. Gen. Diurn. Lep., 1: 127. (Venezuela). (Without description or figure).]

A. agna Gdm. & Slv., 1879. Biol. C. A., Rhop. 1: 15-16; pl. 3, fig. 12. (Panama).

Widespread, this is found in Trinidad, Venezuela, Colombia, Panama, Costa Rica and Nicaragua. (11 ♂, 5 ♀).

Callithomia agrippina alpho (C. & R. Felder).

Ithomia alpho Feld., 1865. Reise Novara, Lep. 2: 359-360. (Venezuela).

This is found in northern Venezuela west into the Santa Martas. It usually is associated with altitudes lower than the cloud forest. (1 ♀).

Dircenna jemina jemina (Geyer).

Ceratinia jemina Geyer, 1837. In Hübner, Zutr. Exot. Schm. Erde: figs. 807, 808.

This is distributed in Venezuela and northern Colombia. (4 ♂, 2 ♀).

Ceratinia tutia tutia (Hewitson).

Ithomia tutia Hew., 1852. Exot. Butt., 1: 22; pl. 11, fig. 6. (River Amazon).

Hewitson's type locality must have been wrong, as all specimens seen have come from northern Venezuela west into Colombia. (14 ♂, 8 ♀).

Episcada hymenaea (Prittwitz).

Ithomia hymenaea Prtw., 1865. Ent. Zeit. Stettin, 26: 136. (No type locality).

Widespread throughout all of South America. There is so little pattern that subspeciation would be hard to detect. (3 ♂).

Episcada sylpha Haensch.

E. sylpha Haensch, 1905. Berl. Ent. Zeit., 50: 171-172; pl. 5, fig. 7. (Venezuela).

A species sibling with *E. hymenaea.* The yellow-white scaling at the end of the cell of the fore wing forms a much shorter bar in *hymenaea,* extending down only to M_1, and there is a submarginal light spot only at the anal angle. In *sylpha* there is a complete row of submarginal pale spots above, within the border and in the distal edge of the transparent area, while the light costal bar at the end of the fore wing cell is a little wider and extends down nearly to M_2. Known only from Venezuela; many records are from fairly high altitudes. (1 ♂).

Pteronymia adina (Hewitson).

Ithomia adina Hew., 1854. Exot. Butt., 1: 34; pl. 17, fig. 47. (No type locality).

Records at hand are from Venezuela at about 1,000 meters altitude. (2 ♂, 11 ♀).

Pteronymia aletta (Hewitson).

Ithomia aletta Hew., 1854. Exot. Butt., 1: 29; pl. 15, fig. 31. (Venezuela).

Records at hand are from moderate elevations in Venezuela. (1 ♂).

Pteronymia asopo (C. & R. Felder).

Ithomia asopo C. & R. Felder, 1865. Reise Novara, Lep. 2: 363-364. (Venezuela).

This is found in northern Venezuela and northern Colombia. (3 ♂, 2 ♀).

Pteronymia beebei n. sp.

P. artena, Haensch, 1909 (part). In Seitz, Gross. Erde, 5: 156.

P. tigranes, Forbes, 1940. *Bol. Soc. Ven. Cien. Nat.,* 6: 316.

Godman and Salvin themselves sank *P. tigranes* as a synonym for *P. artena* (Hewitson) (see Biol. C. A., Rhop. Suppl.: 646), and evidently were correct in doing so. In resurrecting the name, Haensch (1909) figured the female as *P. tigranes* and the male as *P. artena*. Bryk (1937), not knowing anything about Ithomines, merely followed suit.

A series of genitalic dissections indicates that *P. artena* is limited to Central America, and that this superficially similar species in Venezuela is clearly distinct.

Pattern and coloration (fig. 1) like *P. artena* with the following differences noted: On the fore wing at the outer edge of the transparent area next to the black opaque border there is a series of vague whitish spots; in *artena* this series consists of a larger spot Cu_1-Cu_2, three smaller dots from Cu_1 to M_1, and another larger one R_5-M_1; in *beebei* there is only the larger one in Cu_1-Cu_2 and one dot in M_3-Cu_1, the rest of the series being missing. On the underside of *artena* in the apex of the fore wing there are two tiny white dots, black ringed, well separated, in R_5-M_1 and R_4-R_5, sometimes with a third smaller one in R_3-R_4; in *beebei* these apical dots are larger, not separated, and all three of them are present. The black crossbar at the end of the fore wing in *artena* is oblong, its inner and outer margins nearly parallel, and with a small point on the inner edge of the recurrent vein; in *beebei* the crossbar is triangular, wider toward the costa, very rarely with a black point over the recurrent vein. There is also a difference in size between the two species, as indicated by the length of the fore wing measured from base to apex at the tip of R_5; *P. artena*, ♂ 28.8 mm. (28-30 mm.), ♀ 27.5 mm. (27-28 mm.); *P. beebei*, ♂ 25.3 mm. (25-26 mm.), ♀ 24.7 mm. (24-25 mm.).

Both species have, in the males, M_1 of the hind wing branching from R_s about half way to the margin from the end of the cell; in the females R_s and M_1 are complete with 1d minute or wanting. Both sexes have a short distad spur on the humeral.

The male genitalia of the two species are very different. In *P. artena* (fig. 3) the apex of the valve is armed with a single, erect and prominent spine-like tooth; in *P. beebei* (fig. 5), the apex of the valve has a pair of small recurving finger-like projections. The penis of each species is provided on its anterior end with a pair of slender perpendicular lateral members, evidently for muscular attachment; in *artena* these are strongly developed, while in *beebei* they are smaller and differently placed. In *artena* the saccus is the same length as the tegumen plus uncus, in *beebei* it is half again as long. The penis of *artena* is up-angled at its mid-point, that of *beebei* is straight; both are terminally sinuate.

Holotype ♂. Rancho Grande, Venezuela; July 7, 1946; N. Y. Z. S. expedition; American Museum of Natural History.

Allotype ♀. Topotypic; June 4, 1946; N. Y. Z. S. expedition; American Museum of Natural History.

Paratypes, 44 ♂, 11 ♀. 30 ♂, 6 ♀, topotypic; N. Y. Z. S. expedition; 26 ♂, 4 ♀, American Museum of Natural History, and 4 ♂, 2 ♀, Carnegie Museum. 3 ♂, 3 ♀, San Esteban, North Venezuela; S. M. Klages; Carnegie Museum. 7 ♂, Las Quiguas, North Venezuela; S. M. Klages; Carnegie Museum. 2 ♀, Venezuela; S. M. Klages; Carnegie Museum. 2 ♂, Rio Magdalena, Colombia [locality doubtful]; Holland collection, Carnegie Museum. 1 ♂, Choroni, Aragua, Venezuela; 1,450 m.; Anduze, 1937; Cornell University Collection. 1 ♂, Mucuchachi, Venezuela; Cornell University Collection.

Pteronymia nubivaga n. sp.

This species (fig. 2) has not been noted in collections previously made in Venezuela; probably it is exclusively a cloud forest inhabitant. It is much like *P. asopo* (Felder) in pattern and coloring, but the white bar just beyond the end of the fore wing cell is less opaque, with the veins crossing it entirely black except for a short part of M_1, while in *P. asopo* all veins crossing the white bar are also white. In *P. nubivaga* R_s is narrowly black where it traverses the white bar, cutting off an oblong white spot above it in the costal margin. Both fore and hind wings are more acute in this than in *P. asopo*. The vague whitish bar mentioned runs down as far as M_3 and, except for the oblong in the costal margin, nowhere is strong enough to be seen except against a dark background. There is a series of five vague whitish spots in the transparent area against the black border, from Cu_2 to R_s, and a whitish cast in the cell.

On the underside, the margins are tawny-brown, the same shade as in *P. asopo*, lined proximad and distad with narrow black lines. The fore wing has three white, black-encircled dots in the apex. There is a series of elongate submarginal dots in the hind wing border, complete from the apex to the anal veins; however, only the uppermost three or four may be white centered, black-encircled, the others represented merely by thickening of the black marginal line; the dot below Cu_1, when white, is divided into a double spot by a thin black median line. The costal margin and particularly the humeral angle is a little yellower than the rest of the margins; there is a black streak in the costal border along the top of the transparent area in the cell.

The humeral vein of the hind wing bears a short distad spur; M_1 is present as a short branch of R at the margin and is 3 mm. long.

On the fore wing the cubital segment between M_3 and Cu_1 is longer than the same vein in *P. asopo*, widening the base of cell M_3-Cu_1.

The male genitalia are figured (fig. 4).

Holotype ♂. Rancho Grande, Venezuela; N. Y. Z. S. expedition; July 2, 1946; genitalia slide No. 574; American Museum of Natural History.

Paratypes: 11 ♂, topotypic; N. Y. Z. S. expedition; 8 ♂, American Museum of Natural History, 3 ♂, Carnegie Museum.

Pteronymia veia (Hewitson).

Ithomia veia Hew., 1852. Exot. Butt., 1: 23; pl. 12, fig. 14. (No type locality).

This was found in considerable numbers at Rancho Grande, but is quite rare in collections made at lower altitudes in Venezuela. (41 ♂, 11 ♀).

Godyris kedema kedema (Hewitson).

Ithomia kedema Hew., 1854. Exot. Butt., 1: 30; pl. 15, fig. 33. (Venezuela).

A Venezuelan subspecies, replaced in Colombia by *G. k. albinotata* (Butler). (17 ♂, 14 ♀).

Pseudoscada timna (Hewitson).

Ithomia timna Hew., 1854. Exot. Butt., 1: 33; pl. 17, fig. 44. (Venezuela).

Pseudoscada arzalia, Forbes (not Hew.), 1940. *Bol. Soc. Ven. Cien. Nat.*, 6: 316.

P. arzalia is Bolivian, but is quite similar to *P. timna*. The white band across the fore wing of *timna* extends to the marginal color in M_3-Cu_1, but in *arazlia* does not quite reach the margin. (16 ♂, 2 ♀).

Hymenitis andromica andromica (Hewitson).

Ithomia andromica Hew., 1854. Exot. Butt., 1: 31; pl. 16, fig. 38. (Venezuela).

This ranges in Colombia and Venezuela; probably a cloud forest form. (66 ♂, 43 ♀).

Hymenitis dercetis (Doubleday & Hewitson).

Ithomia dercetis Dbld. & Hew., 1847. Gen. Diurn. Lep., 1: 125; pl. 18, fig. 6. (Venezuela).

This is found both in Venezuela and Colombia at higher altitudes. (72 ♂, 12 ♀).

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Explanation of the Plate.

Plate I.

Fig. 1. *Pteronymia beebei* n. sp. Holotype ♂. Natural size.

Fig. 2. *Pteronymia nubivaga* n. sp. Holotype ♂. Natural size.

Fig. 3. *Pteronymia artena* (Hew.), Carillo, C. R. Male genitalia, slide No. 572.

Fig. 4. *Pteronymia nubivaga* n. spec. Holotype ♂. Male genitalia, slide No. 574.

Fig. 5. *Pteronymia beebei* n. sp. Paratype ♂. Male genitalia, slide No. 573.

In the photographs, the detached wings to the left illustrate the under sides of the wings. The drawings of gentialia all are to the same scale, as indicated; the left valves have been dissected and are shown separately.